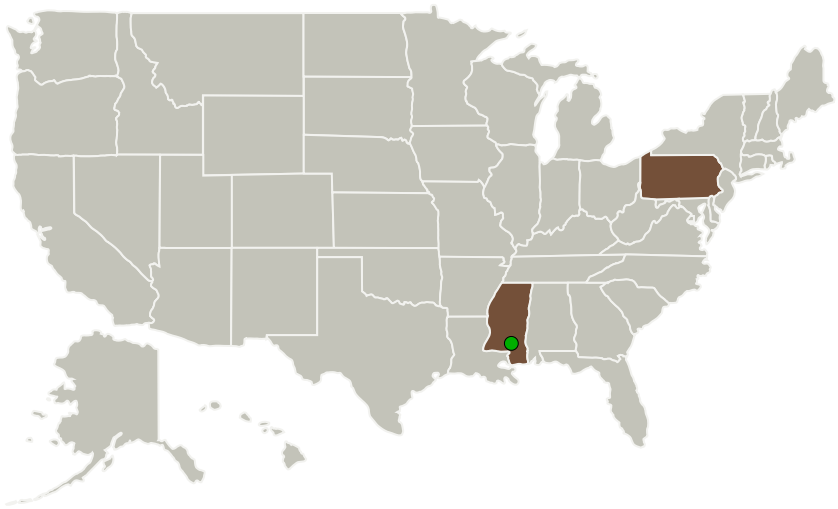
Extreme Environment Ceramic Energy Harvesting/Sensors, Phase I

Completed Technology Project (2015 - 2016)

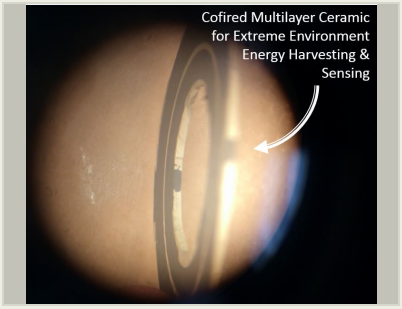
Project Introduction

It is proposed to address the critical element in the NASA/NRC report that identifies the need for Energy Harvesting that 'can provide local power to improve efficiency, or even provide power to NASA's equipment in Extreme Environments where other power sources could not operate or would be too large or bulky or inefficient. The same devices will provide harsh environment compatible sensor capabilities enabling identification and prognostics functions. The solution uses high temperature ceramic materials in novel energy coupling designs and entirely new energy circuitry that provide very efficient high-energy power generation applicable to NASA Extreme Environments applications, particularly high temperature conditions such that occur during propulsion, high solar exposure, or elevated thermal loading conditions.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Solid State Ceramics, Inc.	Lead Organization	Industry	Williamsport, Pennsylvania
Stennis Space Center(SSC)	Supporting Organization	NASA Center	Stennis Space Center, Mississippi



Extreme Environment Ceramic Energy Harvesting/Sensors, Phase I Briefing Chart Image

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Primary U.S. Work Locations	
Mississippi	Pennsylvania

Project Transitions

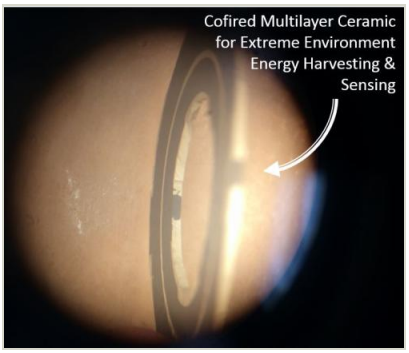
June 2015: Project Start

June 2016: Closed out

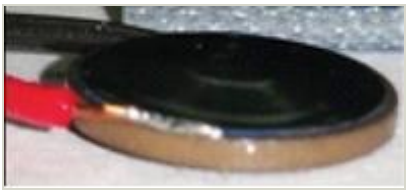
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138851)*

Images



Briefing Chart Image
Extreme Environment Ceramic Energy Harvesting/Sensors, Phase I Briefing Chart Image
(https://techport.nasa.gov/image/132540)



Final Summary Chart Image
Extreme Environment Ceramic Energy Harvesting/Sensors, Phase I Project Image
(https://techport.nasa.gov/image/134934)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Solid State Ceramics, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

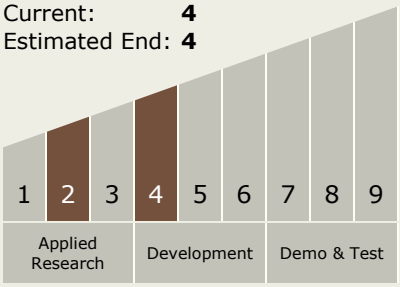
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Safakcan Tuncdemir

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.1 Power Generation and Energy Conversion
    - TX03.1.4 Dynamic Energy Conversion

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System